

Recent Minima of 225 Eclipsing Binary Stars

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Abstract This paper continues the publication of times of minima for eclipsing binary stars. Times of minima determined from observations received by the AAVSO Eclipsing Binaries Section from August 2020 through January 2021 are presented.

1. Recent observations

The accompanying list (Table 1) contains times of minima calculated from recent CCD observations made by participants in the AAVSO's eclipsing binary program. These observations were reduced by the observers or the writer using the method of Kwee and van Woerden (1956).

The linear elements in the *General Catalogue of Variable Stars* (GCVS; Kholopov *et al.* 1985) were used to compute the O–C values for most stars. For a few exceptions where the GCVS elements are missing or are in significant error, light elements from another source are used: CD Cam (Baldwin and Samolyk 2007), AC CMi (Samolyk 2008), CW Cas (Samolyk 1992), DV Cep (Frank and Lichtenknecker 1987), EF Ori (Baldwin and Samolyk 2005), GU Ori (Samolyk 1985).

The light elements used for QX And, GS Aqr, V409 Aql, V688 Aql, V889 Aql, LZ Lyr, DK Sct, and V1128 Tau are from TIDAK—Timing DAtabase at Krakow (<http://www.as.up.krakow.pl/ephem/>; Kreiner 2004).

The light elements used for V1261 Cas, V2553 Cyg, MZ Del, FW Lib, V502 Oph, VZ Psc and NN Vir are from (Paschke 2014).

The light elements used for V407 Peg are from (Nelson 2014).

The light elements used for NY Boo, MY Cam, V362 Cas, and V2642 Oph are from the AAVSO VSX site (Watson *et al.* 2014).

O–C values listed in this paper can be directly compared with values published in the AAVSO *Observed Minima Timings of Eclipsing Binaries* monographs. The standard error is included when available. Column F indicates the filter used. A “TG” indicates DSLR green band; a “C” indicates a clear filter.

This list will be web-archived and made available through the AAVSO ftp site at <ftp://ftp.aavso.org/public/datasets/gsamj491eb225.txt>. This list, along with the eclipsing binary data from earlier AAVSO publications, is also included in the Lichtenknecker Database administrated by the Bundesdeutsche Arbeitsgemeinschaft für Veränderliche Sterne e.V. (BAV) at: <http://www.bav-astro.de/LkDB/index.php?lang=en>.

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Table 1. Recent times of minima of stars in the AAVSO eclipsing binary program.

<i>Star</i>	<i>JD (min) Hel. 2400000+</i>	<i>Cycle</i>	<i>O-C (day)</i>	<i>F</i>	<i>Observer</i>	<i>Standard Error (day)</i>	<i>Star</i>	<i>JD (min) Hel. 2400000+</i>	<i>Cycle</i>	<i>O-C (day)</i>	<i>F</i>	<i>Observer</i>	<i>Standard Error (day)</i>
RT And	58423.5999	27478	-0.0143	C	L. Hazel	0.0004	CL Aur	59138.9250	21032	0.1888	V	G. Samolyk	0.0002
RT And	59060.7077	28491	-0.0121	TG	G. Conrad	0.0001	CL Aur	59158.8345	21048	0.1885	V	L. Hazel	0.0002
RT And	59118.5692	28583	-0.0121	TG	A. Howell	0.0001	CL Aur	59188.6992	21072	0.1885	V	G. Samolyk	0.0002
RT And	59157.5619	28645	-0.0130	V	G. Samolyk	0.0001	EM Aur	59193.7236	15479	-1.1399	V	G. Samolyk	0.0006
TW And	59114.7429	4874	-0.0680	V	L. Hazel	0.0001	EP Aur	59129.8497	55533	0.0204	V	G. Samolyk	0.0002
TW And	59209.5662	4897	-0.0685	V	G. Samolyk	0.0004	EP Aur	59193.6765	55641	0.0184	V	G. Samolyk	0.0002
UU And	59075.7868	11724	0.1125	V	G. Samolyk	0.0002	HP Aur	59150.7879	11522.5	0.0753	V	G. Samolyk	0.0001
UU And	59233.3368	11830	0.1151	V	T. Arranz	0.0001	HP Aur	59165.7275	11533	0.0754	V	G. Samolyk	0.0001
WZ And	59095.8241	26196	0.0876	V	G. Samolyk	0.0003	IM Aur	59153.7495	14943	-0.1411	V	G. Samolyk	0.0001
WZ And	59220.3486	26375	0.0894	V	T. Arranz	0.0001	IM Aur	59153.7499	14943	-0.1407	V	N. Simmons	0.0003
XZ And	59130.8973	25900	0.2056	V	G. Samolyk	0.0001	TU Boo	59215.9133	80637.5	-0.1675	V	K. Menzies	0.0001
XZ And	59167.5442	25927	0.2060	V	G. Samolyk	0.0001	TY Boo	59225.9321	78025	-0.0578	V	K. Menzies	0.0001
XZ And	59186.5462	25941	0.2061	V	G. Samolyk	0.0001	NY Boo	59086.4135	23500.5	0.0501	V	A. Beck	0.0006
AB And	59097.5416	69263.5	-0.0496	V	L. Corp	0.0002	Y Cam	59166.6097	4902	0.5113	V	L. Hazel	0.0002
AB And	59115.6297	69318	-0.0496	V	G. Samolyk	0.0001	AO Cam	59213.4234	20349.5	-0.0289	TG	G. Coates	0.0001
AB And	59138.6965	69387.5	-0.0493	TG	G. Conrad	0.0004	AO Cam	59213.5870	20350	-0.0302	TG	G. Coates	0.0001
AB And	59138.8617	69388	-0.0501	TG	G. Conrad	0.0001	CD Cam	59157.7558	8368.5	-0.0188	V	G. Samolyk	0.0006
AD And	59080.8426	20359.5	-0.0624	V	G. Samolyk	0.0003	MY Cam	59214.5275	3995	-0.1158	TG	G. Coates	0.0004
AD And	59112.8935	20392	-0.0629	V	G. Samolyk	0.0002	RT CMa	59157.9534	25146	-0.7843	V	G. Samolyk	0.0003
AD And	59206.5789	20487	-0.0661	V	K. Menzies	0.0001	TZ CMa	59150.9163	16755	-0.2324	V	G. Samolyk	0.0002
BD And	59076.8436	52094	0.0112	V	G. Samolyk	0.0002	TZ CMa	59242.6657	16803	-0.2324	V	G. Samolyk	0.0002
BD And	59128.6874	52206	0.0099	TG	G. Conrad	0.0004	UU CMa	59167.9584	6725	-0.0598	V	G. Samolyk	0.0002
BD And	59161.5547	52277	0.0112	V	G. Samolyk	0.0001	XZ CMi	59167.9505	28893	0.0059	V	G. Samolyk	0.0001
BX And	59096.8302	36990	-0.1139	V	N. Simmons	0.0002	AC CMi	59161.9124	8283	0.0061	V	G. Samolyk	0.0001
BX And	59104.7620	37003	-0.1136	V	L. Hazel	0.0003	AC CMi	59201.8051	8329	0.0069	V	G. Samolyk	0.0001
BX And	59123.6753	37034	-0.1139	TG	G. Conrad	0.0003	RW Cap	59096.7198	4844	-0.8206	V	G. Samolyk	0.0002
BX And	59227.3937	37204	-0.1151	V	T. Arranz	0.0002	TY Cap	59076.4503	10034	0.1030	V	T. Arranz	0.0003
DS And	59127.6711	22746	0.0049	V	G. Samolyk	0.0003	RZ Cas	59130.6351	13328	0.0768	V	G. Samolyk	0.0001
QX And	59127.7592	16080	0.0094	V	G. Samolyk	0.0005	RZ Cas	59167.6874	13359	0.0764	V	N. Simmons	0.0001
QX And	59131.8801	16090	0.0086	V	K. Menzies	0.0004	RZ Cas	59185.6160	13374	0.0763	V	G. Samolyk	0.0001
RY Aqr	59111.6196	9299	-0.1520	V	G. Samolyk	0.0001	RZ Cas	59222.6682	13405	0.0759	TG	G. Conrad	0.0003
RY Aqr	59129.3189	9308	-0.1521	V	T. Arranz	0.0001	TV Cas	59137.6245	8019	-0.0330	TG	A. Howell	0.0002
CX Aqr	59130.5833	40787	0.0192	V	G. Samolyk	0.0001	TV Cas	59157.5628	8030	-0.0333	V	G. Samolyk	0.0002
CZ Aqr	59167.5609	18309	-0.0711	V	G. Samolyk	0.0001	TW Cas	59152.5835	12003	0.0232	TG	G. Coates	0.0003
GS Aqr	59105.4284	17658	-0.0068	V	X. Miret	0.0005	ZZ Cas	59041.7432	20590	0.0273	V	L. Hazel	0.0006
XZ Aql	59087.6825	8033	0.1805	V	G. Samolyk	0.0003	ZZ Cas	59138.7373	20668	0.0263	V	G. Samolyk	0.0001
XZ Aql	59162.5490	8068	0.1757	V	L. Hazel	0.0002	AB Cas	58422.7158	11492	0.1394	C	L. Hazel	0.0002
KO Aql	59080.5032	6003	0.1086	V	T. Arranz	0.0001	AB Cas	59070.6220	11966	0.1474	V	L. Hazel	0.0006
KO Aql	59120.6005	6017	0.1092	V	L. Hazel	0.0001	AB Cas	59085.6571	11977	0.1469	V	G. Samolyk	0.0002
KP Aql	59114.6002	5558.5	-0.0263	V	L. Hazel	0.0003	AE Cas	59068.6400	44337	0.0809	V	L. Hazel	0.0008
OO Aql	59076.4034	40378	0.0760	V	L. Corp	0.0002	CW Cas	59098.6291	54777.5	-0.1341	V	G. Samolyk	0.0002
OO Aql	59078.6838	40382.5	0.0758	V	G. Samolyk	0.0001	CW Cas	59151.5606	54943.5	-0.1341	V	L. Hazel	0.0006
V342 Aql	59080.5448	5828	-0.0965	V	T. Arranz	0.0002	CW Cas	59154.5875	54953	-0.1364	V	L. Hazel	0.0006
V343 Aql	59004.7481	16568	-0.0514	C	L. Hazel	0.0003	CW Cas	59154.7479	54953.5	-0.1354	V	L. Hazel	0.0002
V343 Aql	59091.4447	16615	-0.0511	V	T. Arranz	0.0001	CW Cas	59182.6468	55041	-0.1371	V	K. Menzies	0.0001
V343 Aql	59113.5747	16627	-0.0564	V	L. Hazel	0.0003	CW Cas	59222.3446	55165.5	-0.1379	V	T. Arranz	0.0001
V343 Aql	59161.5390	16653	-0.0518	V	G. Samolyk	0.0001	DZ Cas	59112.6099	39086	-0.2192	V	G. Samolyk	0.0003
V346 Aql	59012.7817	15451	-0.0170	C	L. Hazel	0.0002	IR Cas	59017.7195	24466	0.0165	V	L. Hazel	0.0006
V346 Aql	59032.6993	15469	-0.0139	V	L. Hazel	0.0006	IR Cas	59171.5550	24692	0.0171	V	G. Samolyk	0.0002
V346 Aql	59102.3990	15532	-0.0151	V	T. Arranz	0.0001	IS Cas	59085.7901	16459	0.0745	V	L. Hazel	0.0006
V346 Aql	59104.6123	15534	-0.0145	V	L. Hazel	0.0002	IS Cas	59133.6692	16485	0.0743	V	G. Samolyk	0.0002
V409 Aql	59105.4060	3223	-0.0228	V	T. Arranz	0.0005	IS Cas	59181.5483	16511	0.0741	V	G. Samolyk	0.0001
V688 Aql	59075.4100	1690	-0.0076	V	T. Arranz	0.0006	IT Cas	59066.6607	7777	0.0730	V	G. Samolyk	0.0003
V889 Aql	59075.4438	590.5	-1.6118	V	T. Arranz	0.0003	MM Cas	59058.7262	20421	0.1273	V	L. Hazel	0.0006
RX Ari	59150.7485	20155	0.0668	V	G. Samolyk	0.0001	MM Cas	59130.5501	20483	0.1261	V	L. Hazel	0.0002
SS Ari	59121.8020	49493	-0.4342	V	G. Samolyk	0.0002	MM Cas	59138.6587	20490	0.1254	V	G. Samolyk	0.0001
SS Ari	59185.5409	49650	-0.4363	V	G. Samolyk	0.0002	MM Cas	59182.6821	20528	0.1269	V	G. Samolyk	0.0002
SS Ari	59228.3714	49755.5	-0.4382	V	T. Arranz	0.0002	OR Cas	59081.6582	11938	-0.0359	V	L. Hazel	0.0006
SS Ari	59243.3940	49792.5	-0.4373	V	T. Arranz	0.0002	OR Cas	59127.7510	11975	-0.0344	V	G. Samolyk	0.0001
SX Aur	59138.8363	15682	0.0231	V	G. Samolyk	0.0001	OR Cas	59222.4243	12051	-0.0352	V	T. Arranz	0.0001
SX Aur	59161.8282	15701	0.0235	V	G. Samolyk	0.0005	OR Cas	59232.3904	12059	-0.0348	V	T. Arranz	0.0001
TT Aur	59127.9018	28427	-0.0124	V	G. Samolyk	0.0001	OX Cas	59155.6476	7185	0.0848	V	G. Samolyk	0.0004
AP Aur	59161.8714	29362.5	1.8241	V	G. Samolyk	0.0002	PV Cas	59066.8332	10762.5	-0.0031	V	G. Samolyk	0.0001
AP Aur	59244.7171	29508	1.8349	V	K. Menzies	0.0002	PV Cas	59081.6832	10771	-0.0321	V	G. Samolyk	0.0002
CL Aur	59092.8798	20995	0.1851	V	L. Hazel	0.0006	PV Cas	59095.6861	10779	-0.0329	TG	G. Conrad	0.0005

Table continued on following pages

Table 1. Recent times of minima of stars in the AAVSO eclipsing binary program (cont.).

<i>Star</i>	<i>JD (min)</i> <i>Hel.</i> <i>2400000+</i>	<i>Cycle</i>	<i>O-C</i> <i>(day)</i>	<i>F</i>	<i>Observer</i>	<i>Standard</i> <i>Error</i> <i>(day)</i>	<i>Star</i>	<i>JD (min)</i> <i>Hel.</i> <i>2400000+</i>	<i>Cycle</i>	<i>O-C</i> <i>(day)</i>	<i>F</i>	<i>Observer</i>	<i>Standard</i> <i>Error</i> <i>(day)</i>
EQ Tau	59194.6415	55607	-0.0484	V	K. Menzies	0.0001	Z Vul	59071.4672	6568	-0.0170	V	T. Arranz	0.0001
EQ Tau	59206.5886	55642	-0.0485	V	R. Sabo	0.0001	RR Vul	59076.6885	4760	-0.0805	V	L. Hazel	0.0006
EQ Tau	59225.5338	55697.5	-0.0482	V	K. Menzies	0.0003	RS Vul	59069.7834	5865	0.0299	V	S. Cook	0.0003
V1128 Tau	59175.4064	21859.5	-0.0059	V	L. Corp	0.0004	AW Vul	59008.8124	15777	-0.0365	C	L. Hazel	0.0006
V1128 Tau	59175.5592	21860	-0.0057	V	L. Corp	0.0002	AW Vul	59085.4256	15872	-0.0362	V	T. Arranz	0.0001
V Tri	59136.6182	59231	-0.0056	TG	A. Howell	0.0002	AX Vul	59136.5611	7054	-0.0404	V	L. Hazel	0.0002
X Tri	58409.5683	16373	-0.0985	C	L. Hazel	0.0002	AX Vul	59138.5855	7055	-0.0408	V	G. Samolyk	0.0001
X Tri	59082.8379	17066	-0.1028	V	L. Hazel	0.0002	AX Vul	59140.6100	7056	-0.0412	TG	A. Howell	0.0002
X Tri	59155.7011	17141	-0.1048	V	G. Samolyk	0.0001	AY Vul	59135.6616	6819	-0.1901	V	G. Samolyk	0.0005
X Tri	59220.3119	17207.5	-0.1011	V	T. Arranz	0.0003	BE Vul	59097.6399	12233	0.1046	V	L. Hazel	0.0002
RS Tri	59121.8465	11096	-0.0575	V	G. Samolyk	0.0001	BE Vul	59105.3994	12238	0.1039	V	T. Arranz	0.0001
RS Tri	59186.7503	11130	-0.0571	V	G. Samolyk	0.0002	BO Vul	59020.7250	11836	-0.0115	V	L. Hazel	0.0002
RV Tri	58367.7697	16366	-0.0439	C	L. Hazel	0.0002	BO Vul	59133.5866	11894	-0.0103	V	G. Samolyk	0.0001
RV Tri	59135.7541	17385	-0.0457	V	G. Samolyk	0.0001	BS Vul	59076.6501	33206	-0.0365	V	G. Samolyk	0.0001
XZ UMa	59157.8618	10627	-0.1588	V	G. Samolyk	0.0001	BS Vul	59167.5605	33397	-0.0367	V	G. Samolyk	0.0001
XZ UMa	59157.8619	10627	-0.1587	V	L. Hazel	0.0002	BT Vul	59038.7202	20712	0.0058	V	L. Hazel	0.0002
W UMi	59066.7724	14922	-0.2243	V	N. Simmons	0.0003	BT Vul	59118.6037	20782	0.0053	V	G. Samolyk	0.0002
RU UMi	59181.8745	33501	-0.0140	V	G. Samolyk	0.0001	BT Vul	59150.5588	20810	0.0068	V	G. Samolyk	0.0002
DL Vir	59007.6969	15364	0.1372	V	S. Cook	0.0007	BT Vul	59182.5120	20838	0.0064	V	G. Samolyk	0.0002
NN Vir	59036.7043	21919	0.0184	V	S. Cook	0.0009	BU Vul	59115.6197	44960	0.0114	V	G. Samolyk	0.0001
Z Vul	59029.7352	6551	-0.0151	V	L. Hazel	0.0002	CD Vul	59075.6459	18687	-0.0019	V	G. Samolyk	0.0002
Z Vul	59066.5584	6566	-0.0159	V	T. Arranz	0.0002							